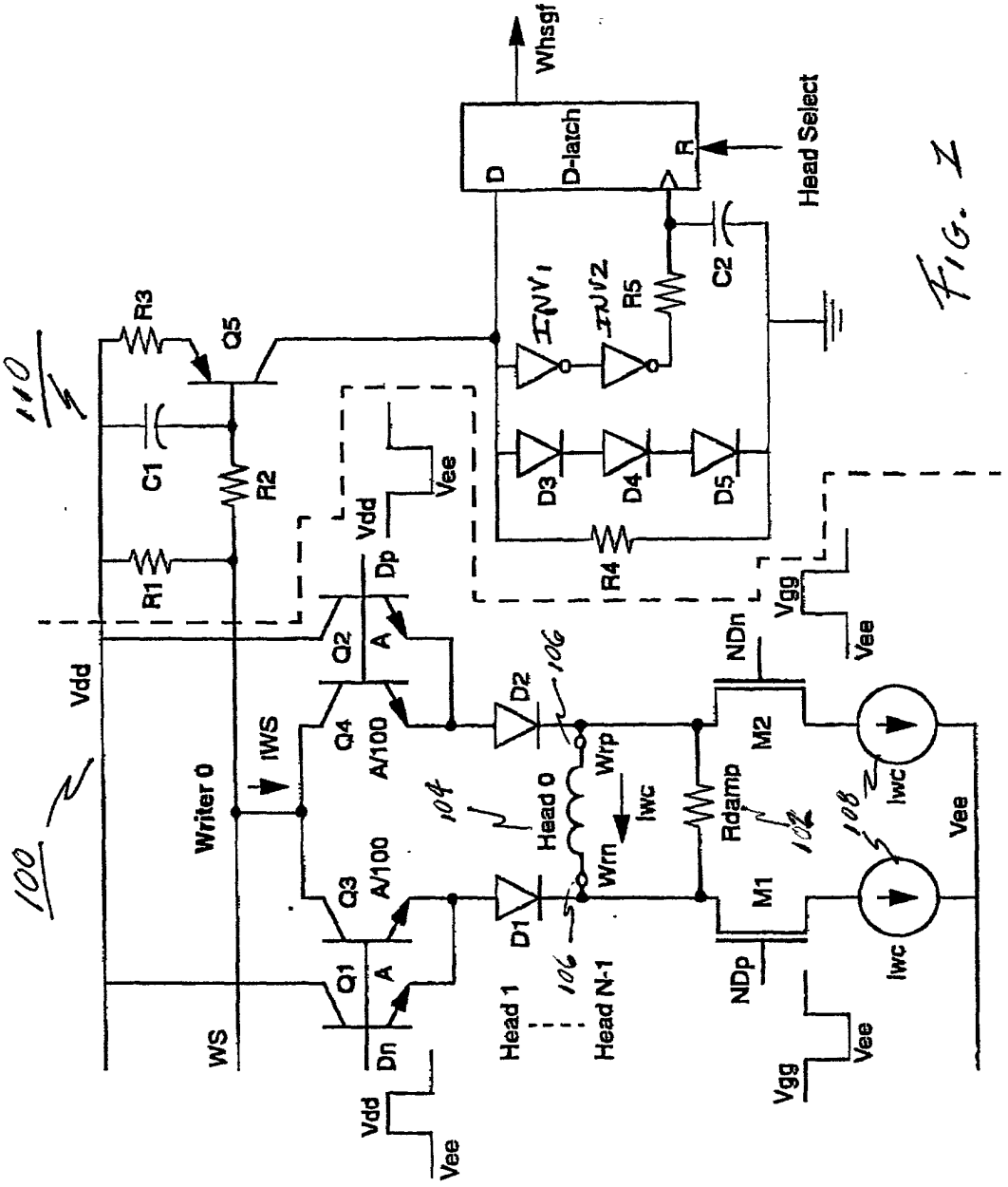
Whsgf
D
D-latch
R
Head Select
INV1
INV2
R5
C2
R3
Q5
C1
R2
R1
D3
D4
D5
R4
Vdd
Vee
Dp
Vgg
Q2
A
NDn
D2
106
Q4
A/100
IWS
Writer 0
Head 0
Wrp
Wrn
Iwc
Rdamp
M2
M1
NDp
Q3
A/100
Q1
A
Dn
WS
D1
Head 1
Head N-1
Iwc
Vee
Vgg
Vdd
Vee
110
100
104
102
108
106

FIG. 1

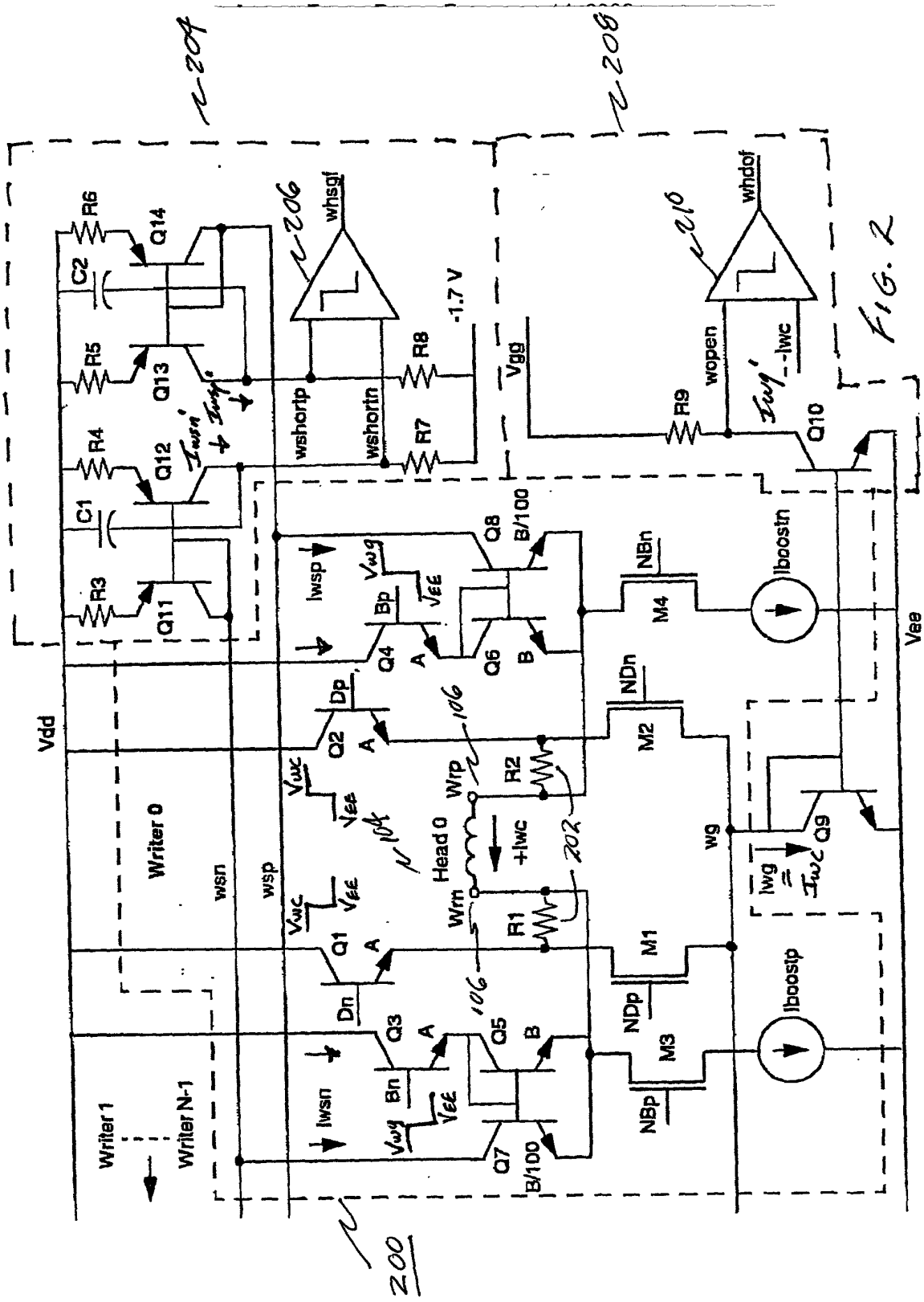
204
208
206
210
whsgf
whdof
R6
Q14
C2
R5
Q13
R4
Q12
C1
R3
Q11
-1.7 V
R8
R7
wshortp
wshortn
Vgg
R9
wopen
Q10
Iboostn
Iboostp
Vdd
Vee
Writer 0
Writer 1
Writer N-1
wsn
wsp
Head 0
+Iwc
-Iwc
Iwg
wg
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
M1
M2
M3
M4
R1
R2
NDn
NDp
NBn
NBp
Dn
Dp
Bn
Bp
Wrm
Wrp
Vwc
Vee
Vwg
Iwsn
Iwsp
B/100
106
104
202
200

FIG. 2

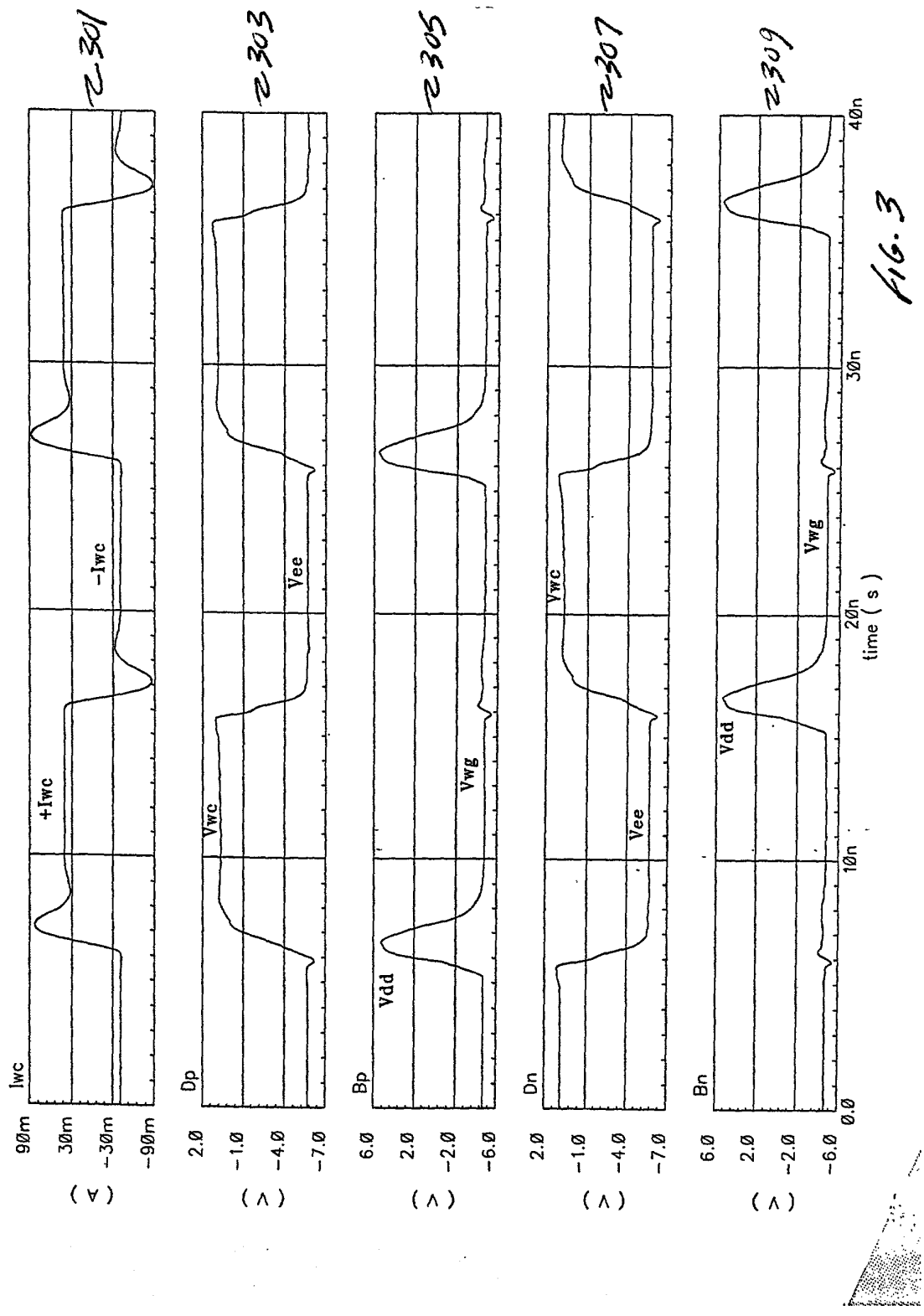
Voltage Mode Writer (+/-5.7 V, 150 Deg. C)
08/23/2000 11:37:58
Iwc = +/-41 mA, vwc = 700 mV, 50 MHz Write Data
2-301
2-303
2-305
2-307
2-309
Iwc
+Iwc
-Iwc
90m
30m
-30m
-90m
(A)
Dp
Vwc
Vee
2.0
-1.0
-4.0
-7.0
(V)
Bp
Vdd
Vwg
6.0
2.0
-2.0
-6.0
(V)
Dn
Vwc
Vee
2.0
-1.0
-4.0
-7.0
(V)
Bn
Vdd
Vwg
6.0
2.0
-2.0
-6.0
(V)
0.0
10n
20n
30n
40n
time (s)

FIG. 3

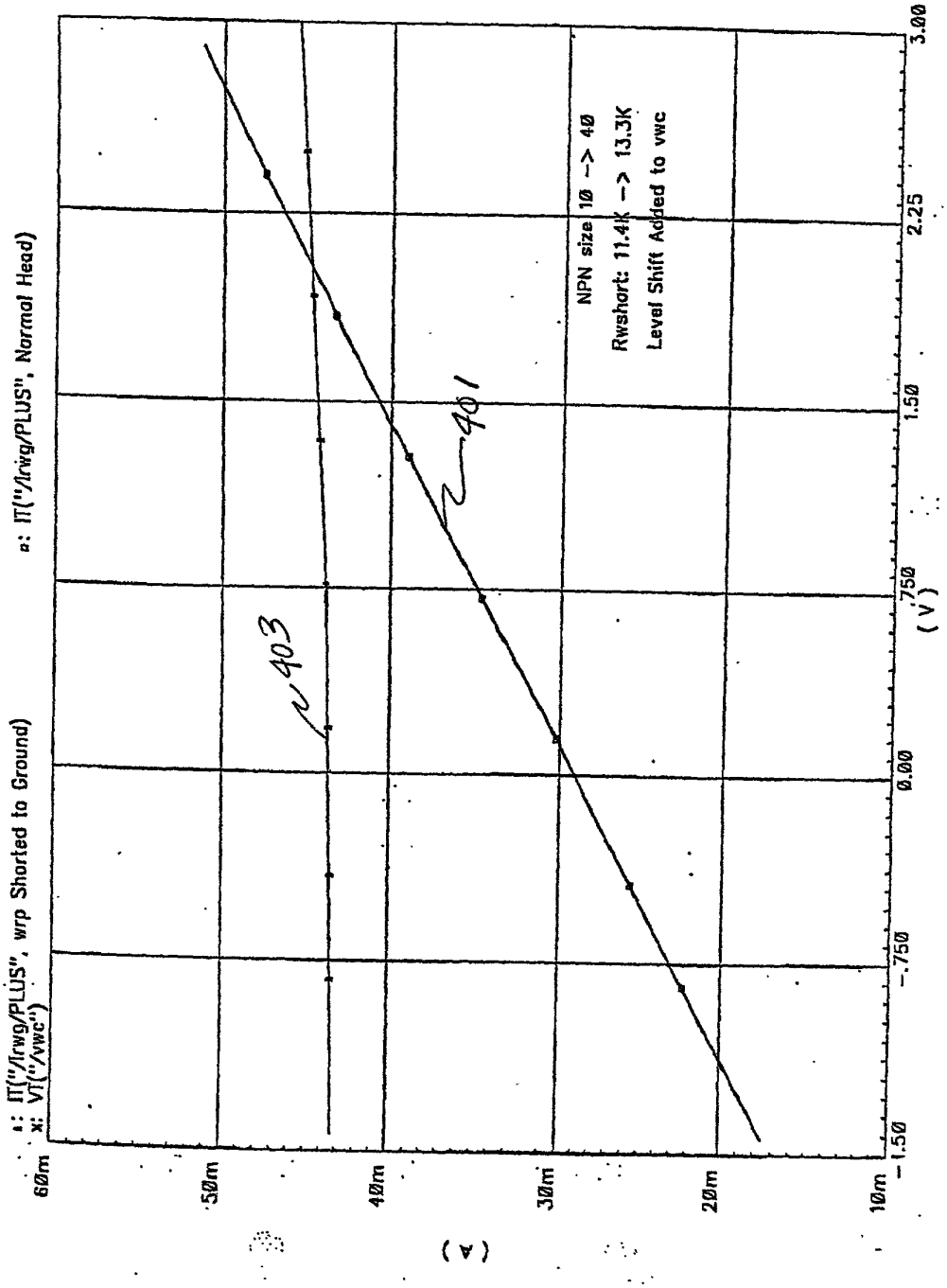
Thor ES2 Writer (+/-5.0 V, 65 Deg. C; 14 Ohm, 10 nH Head Model)
WCUR<4:0> = 00H --> 1FH; BJT_ES215, NMOS_ES105 Models
a: IT("/irwg/PLUS", Normal Head)
b: IT("/irwg/PLUS", wrp Shorted to Ground)
x: VT("/vwc")
NPN size 10 --> 40
Rwshort: 11.4K --> 13.3K
Level Shift Added to vwc
401
403
60m
50m
40m
30m
20m
10m
(A)
-1.50
-.750
0.00
.750
1.50
2.25
3.00
(V)

FIG. 4

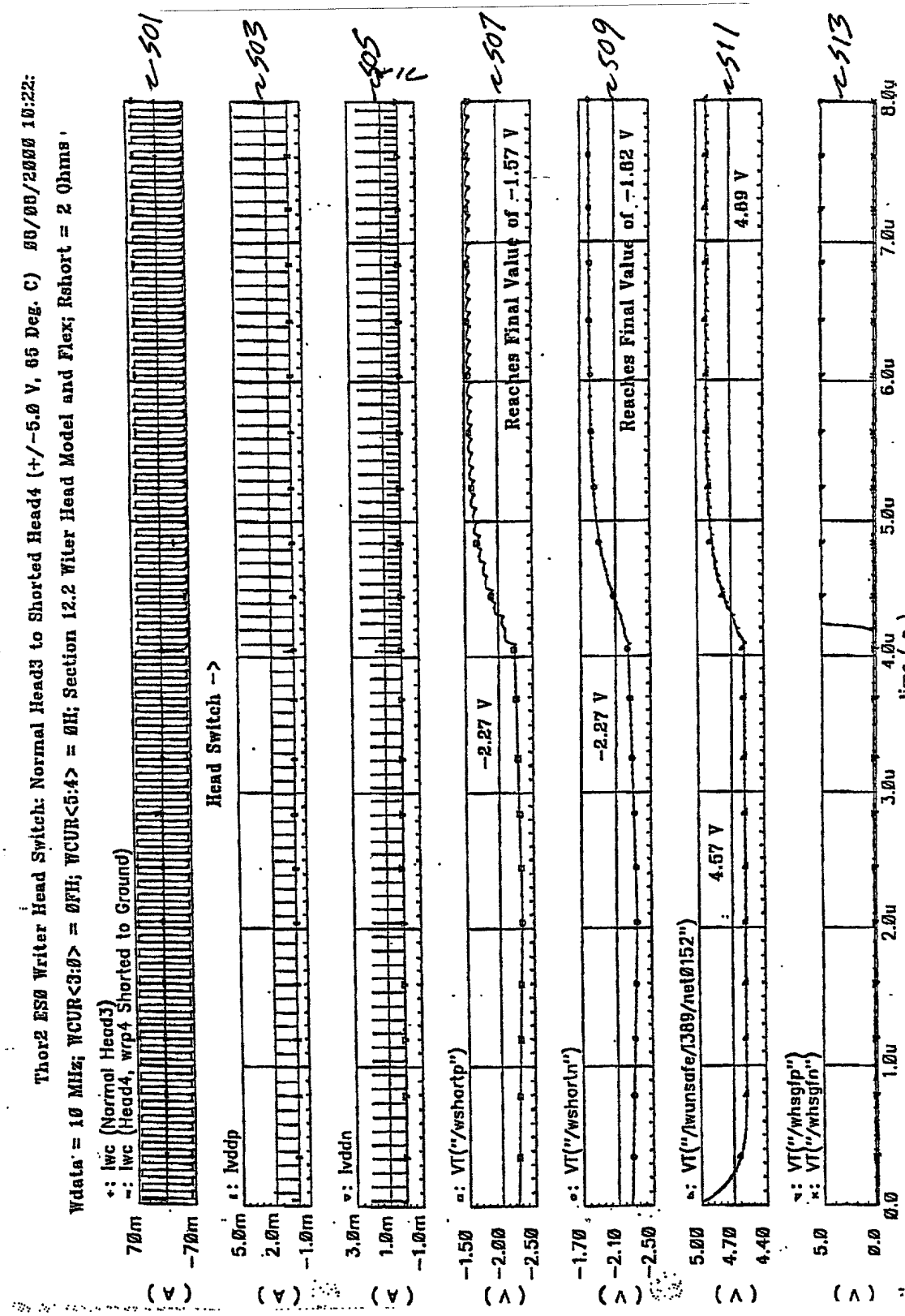
Thor2 ES0 Writer Head Switch: Normal Head3 to Shorted Head4 (+/-5.0 V, 65 Deg. C) 00/00/2000 10:22:
Wdata = 10 MHz; WCUR<3:0> = 0FH; WCUR<5:4> = 0H; Section 12.2 Witer Head Model and Flex; Rshort = 2 Ohms
+: Iwc (Normal Head3)
-: Iwc (Head4, wrp4 Shorted to Ground)
Head Switch -->
I: Ivddp
V: Ivddn
O: VT("/wshortp")
O: VT("/wshortn")
A: VT("/wunsafe/I389/net0152")
V: VT("/whsgfp")
X: VT("/whsgfn")
-2.27 V
4.67 V
Reaches Final Value of -1.57 V
Reaches Final Value of -1.82 V
4.89 V
time (s)
501
503
505
507
509
511
513

FIG. 5

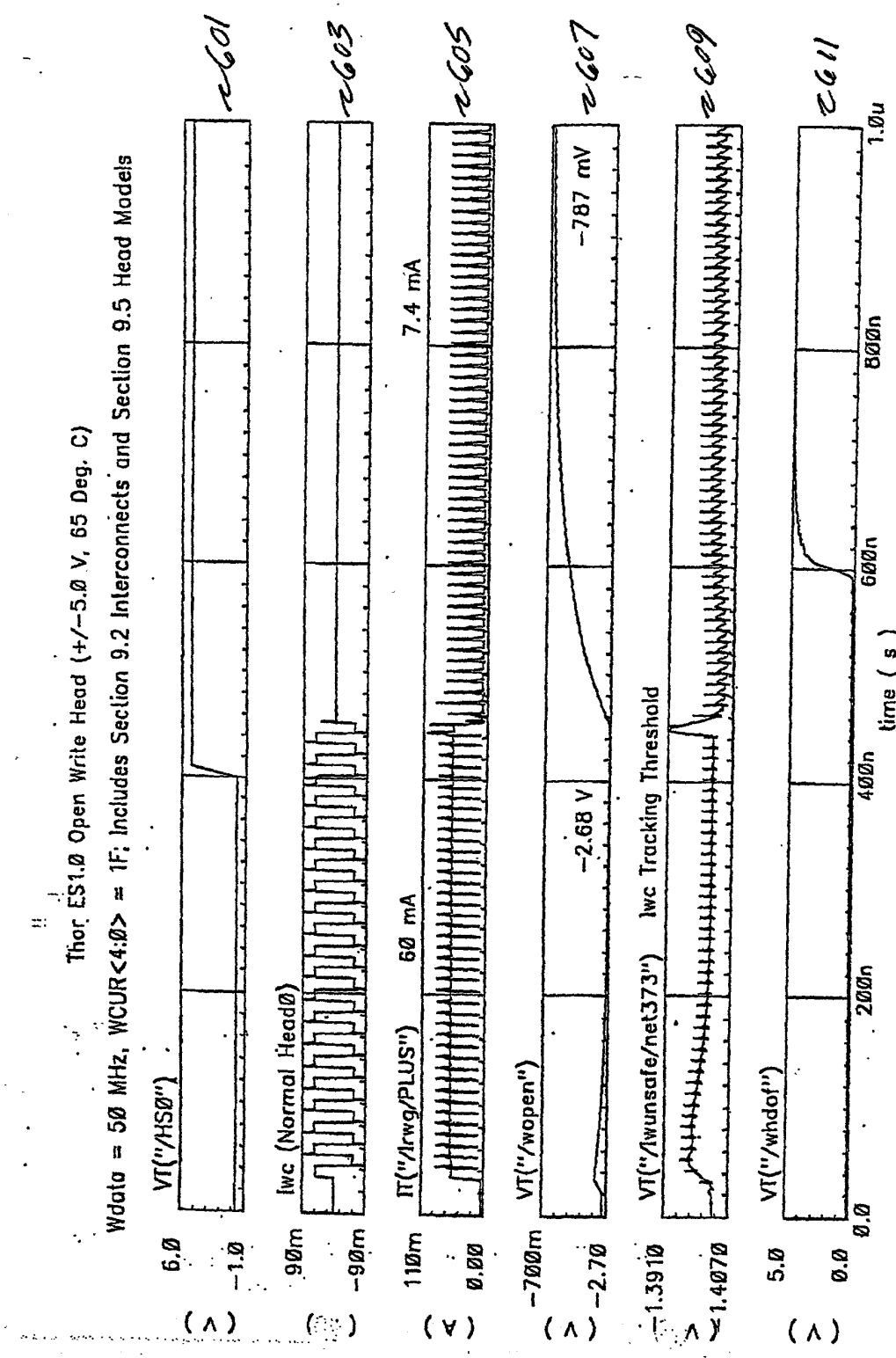
Thor ES1.0 Open Write Head (+/-5.0 V, 65 Deg. C)
Wdata = 50 MHz, WCUR<4:0> = 1F; Includes Section 9.2 Interconnects and Section 9.5 Head Models
VT("/HS0")
6.0
-1.0
2601
Iwc (Normal Head0)
90m
-90m
2603
IT("/Irwg/PLUS")
60 mA
7.4 mA
110m
0.00
2605
VT("/wopen")
-2.68 V
-787 mV
-700m
-2.70
2607
VT("/Iwunsafe/net373")
Iwc Tracking Threshold
-1.3910
1.4070
2609
VT("/whdof")
5.0
0.0
2611
0.0
200n
400n
600n
800n
1.0u
time (s)

FIG. 6